United States
Department of
Agriculture

Natural Resources
Conservation
Service

Jamie L. Whitten Plant Materials Center

1995 Annual Report of Activities

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INTRODUCTION

The Jamie L. Whitten Plant Materials Center (PMC), located at Coffeeville, Mississippi, is operated by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), formerly Soil Conservation Service. This PMC is part of a national network of 25 plant materials centers whose mission is to develop plants and cultural techniques to address current conservation problems.

The objective of the National Plant Materials Program is to provide effective vegetative solutions to conserve soil and water resources, improve water and forage quality, and increase wildlife habitat. To meet this challenge, the PMCs identify superior adapted plants, develop production and management techniques, assist commercial producers, and promote acceptance and use in conservation and environmental programs. Since the beginning of the Plant Materials Program, over 300 superior plants have been released nationwide. Plant Materials Centers also evaluate methods to better utilize plants that are already commercially available.

The Coffeeville PMC began operations on August 8, 1960, functioning both as a PMC and a seed production unit for the Yazoo-Little Tallahatchie Flood Prevention Project. The seed production unit was discontinued in 1982, and the plant materials function was reorganized and expanded. During its tenure, the PMC has evaluated over 6,800 plant accessions for erosion control on cropland, stream channels and critical areas, as well as for forage production, wildlife food and cover, and wetland mitigation and restoration.

The PMC works cooperatively with other agencies and organizations in carrying out these functions. Cooperators include the Mississippi Agricultural and Forestry Experiment Station (MAFES), Mississippi Association of Conservation Districts, USDA Forest Service, USDA Agricultural Research Service, and various colleges and universities. The PMC also has cooperative agreements with the National Park Service (NPS) and the Mississippi Military Department.

LOCATION AND FACILITIES

The Jamie L. Whitten PMC is located within the Holly Springs National Forest, approximately five miles east of U.S. Interstate Highway 55, on Mississippi Highway 330 between Coffeeville and Tillatoba (see map inside back cover). Facilities consist of an office and laboratory complex, a greenhouse complex, seed cleaning and warehouse buildings, shop and equipment storage areas, and fuel, fertilizer, and herbicide storage buildings. A constructed wetland provides waste and storm water treatment for the greenhouse complex.

Many of the facilities listed above resulted from an expansion program begun in 1990 to upgrade this center. The service area includes portions of seven states, with the laboratory facility designed to meet the water quality and forage testing needs of this and other PMCs. Space is available in the greenhouse complex for expansion of laboratory capacity as future objectives and funding permit.

The PMC occupies approximately 200 acres of open fields. The growing areas consist of both bottomland and upland fields, with most being of irregular size and shape, defined by streams, drainages, roads, and other topographic features. Bottomland fields primarily have Oaklimeter silt loam soils, which are acid and often wet. With proper drainage and management these soils can become very productive. The upland soils are predominantly Loring and Grenada silt loams with fragipans. These soils are also acid and moderately to highly productive. This variety of available growing sites permits plant evaluation under conditions representative of much of the service area. Tests may also be located at sites off the center, which further broadens the available range of testing situations. Specialized aquatic cells are located at the PMC for use in production and evaluation of aquatic plants.

WEATHER

Weather conditions for this annual report covers the period from October 1, 1994 through September 30, 1995. There were 203 frost free days for this period.

The cool season months were considered to be milder than average. For January and February, the usual coldest months of the year, average high temperatures for each month were comparable to that of April.

Higher than average temperatures continued throughout the remaining growing season. Heat index for parts of late July and early August was above 105^0 F.

In addition to heat stress, little or no rainfall occurred from mid-August until late October. Some tests that were initiated in 1995 had to be irrigated to maintain the young stands. Plants in some of the no-till trials did not show signs of severe wilting until late August. However, below average yields were attributed to the high heat, drying winds, and low rainfall levels. Extremely high worm pressures also affected yields in the cotton experiments.

1995 Growing Season Monthly Average Temperatures

	1994			1995									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Avg
High	72	67	55	73	75	87	88	90	93	97	99	97	83
Low	52	45	38	15	18	26	32	46	52	64	69	44	42

1976-1995 Monthly Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
High	48	55	65	73	79	88	91	90	85	72	62	52	72
Low	29	33	41	49	58	66	72	70	62	50	41	34	50

1995 Growing Season Monthly Total Rainfall

1994			1995									
Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
5.88	5.79	4.55	5.89	6.69	6.90	7.08	2.75	4.35	5.56	4.43	0.66	60.53

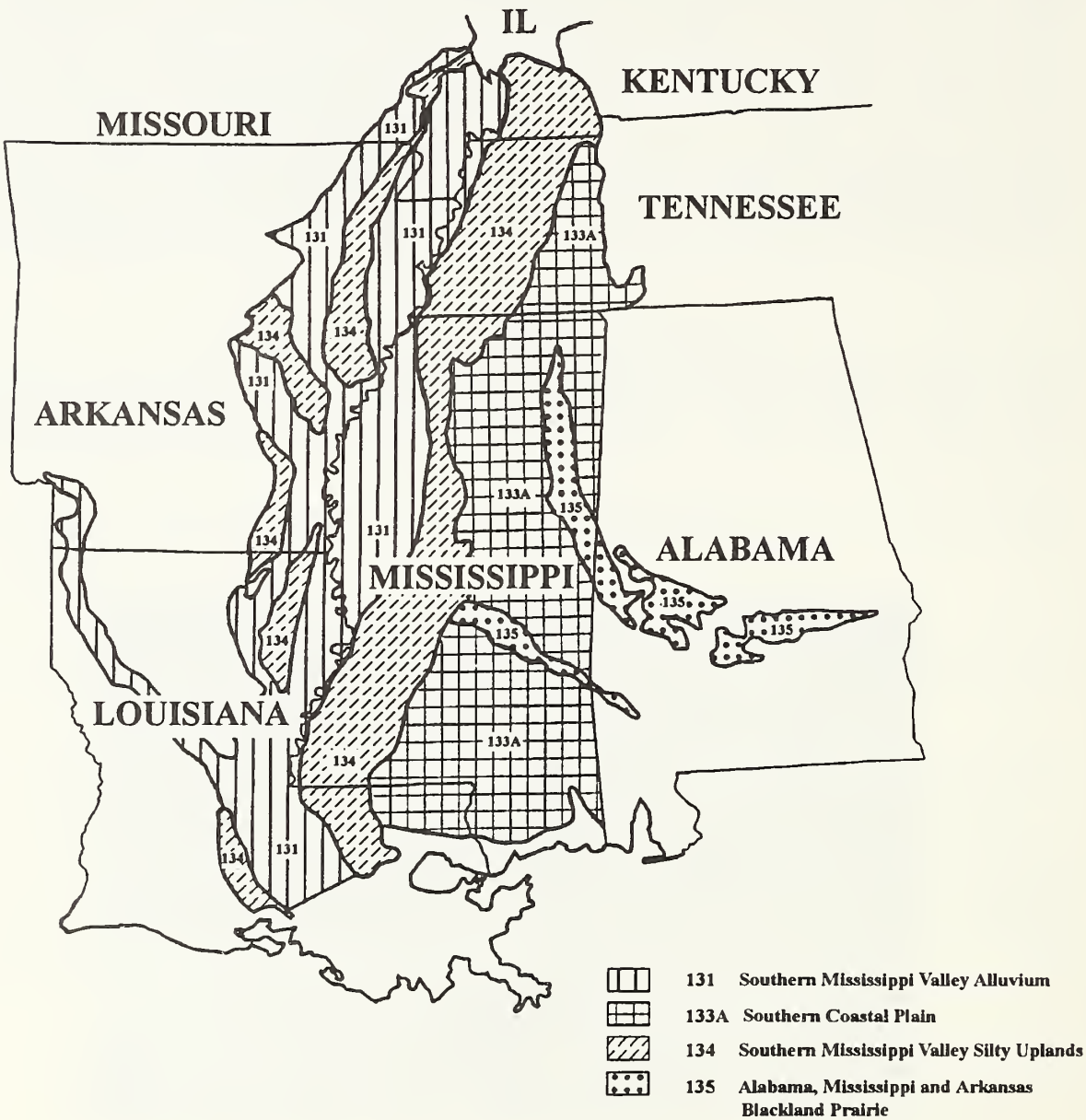
1976-1995 Monthly Average Total Rainfall

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
4.38	5.04	5.73	5.49	5.76	4.86	4.32	3.26	4.17	3.94	6.30	5.89	59.15

SERVICE AREA

The primary service area of the Jamie L. Whitten PMC includes most of Mississippi, excluding the coastal areas that are serviced by the Golden Meadow PMC in Louisiana. It also includes parts of Arkansas, Louisiana, Missouri, Alabama, Kentucky, and Tennessee. This territory is defined by Major Land Resource Areas (MLRAs), which possess similar soil types, climate, topography, and land use patterns. The MLRAs involved are: MLRA 131 (Southern Mississippi Valley Alluvium); MLRA 133A (Southern Coastal Plain); MLRA 134 (Southern Mississippi Valley Silty Uplands); and MLRA 135 (Alabama, Mississippi, and Arkansas Blackland Prairie).

The map below identifies the service area and MLRAs served by this PMC.



LONG-RANGE PROGRAM

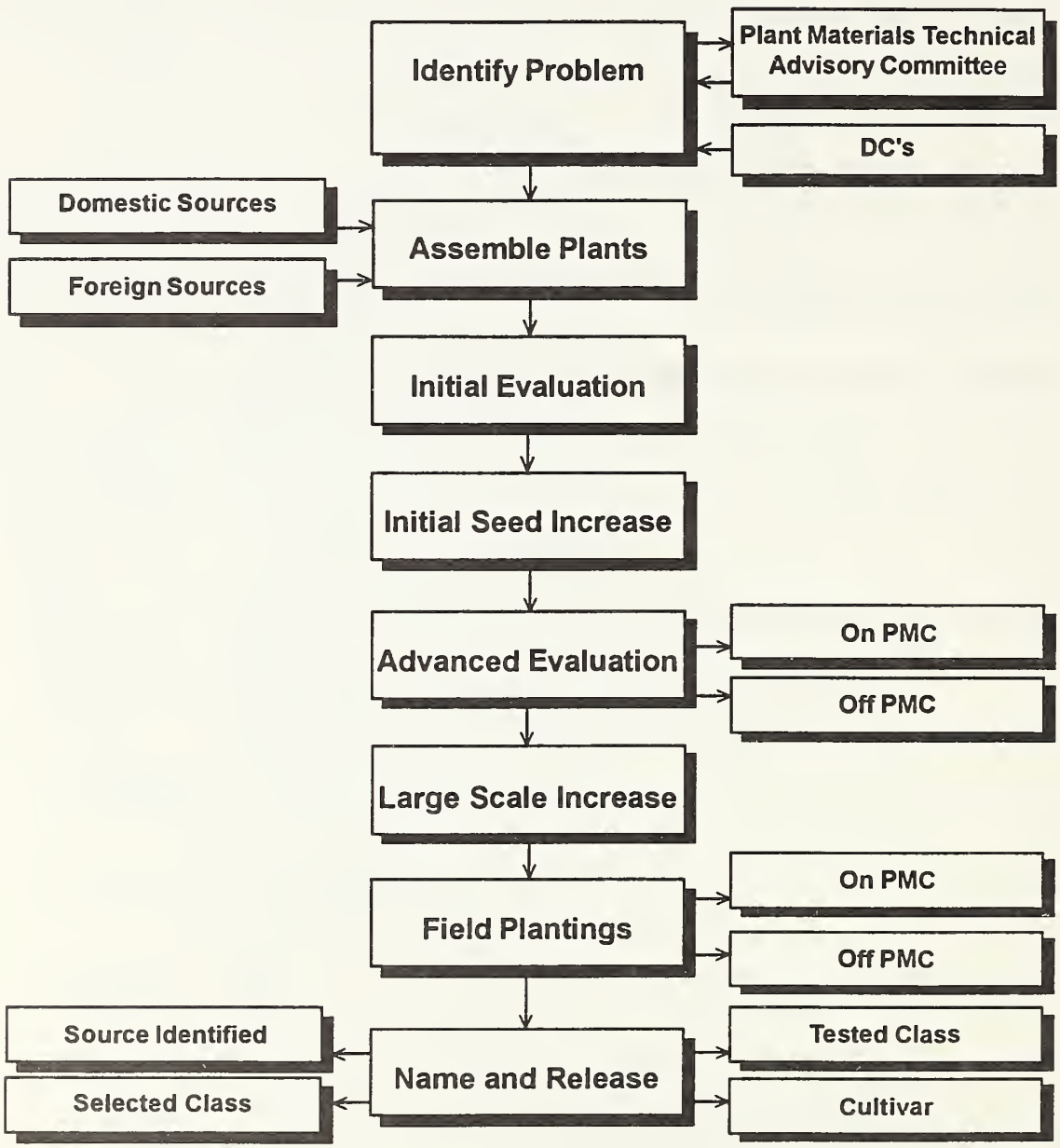
Conservation problems that exist within the Jamie L. Whitten PMC service area are identified in the long-range program. The long-range program is established by the State Conservationist's Advisory Committee to direct plant materials activities. Outlined below are the major conservation problems and level of priority established by the State Conservationist's Advisory Committee.

CROPLAND EROSION CONTROL	PRIORITY
Winter cover compatible with no-till or conservation tillage	High
Improved plants for field borders, strips, waterways, and to substitute for mechanical practices	High
Alternative cropping systems for limited resource producers	High
PASTURE AND RANGELAND EROSION CONTROL	
Cool-season forage grasses	Medium
Warm-season forage grasses	High
Legumes compatible with grasses	Low
WOODLAND EROSION CONTROL	
Desirable plants for clear-cut sites	Medium
CRITICAL AREA EROSION CONTROL	
Vegetation for roadways and drastically disturbed sites	Medium
Vegetation for shorelines of ponds, lakes, and streams	Medium
Plants for soil damaged by chemicals or industrial wastes	Medium
WATER QUALITY IMPROVEMENT	
Non-point source pollution and contamination of surface and groundwater	High
Removal of toxic chemicals	Medium
Animal waste management systems	High

PLANT RELEASE PROCESS

The Plant Materials Program has established a systematic process to evaluate and release plants to address the conservation problems outlined in the long-range program. The following flow chart illustrates the steps involved in this process.

PLANT MATERIALS PROGRAM



ACTIVE PROJECTS IN 1995

Project plans are formulated based on the conservation problems outlined in the PMC long-range program. Projects active in 1995 will be categorized according to the major conservation problem they address.

Cropland Erosion Control

Project:

28A801M.10 Arrowleaf Clover as a Nitrogen Source for No-till Grain Sorghum

Project Stage:

Final year of a 3 year study.

Background:

'Meechee' arrowleaf clover (*Trifolium vesiculuosum*) has proven to be an excellent reseeding legume. With the potential to fix 100 pounds N/acre and to reseed for more than one year, it could be an alternate cover crop to crimson clover (*Trifolium incarnatum*) and hairy vetch (*Vicia villosa*).

Objective:

To determine if grain sorghum *(Sorghum bicolor*) can be grown successfully no-till in arrowleaf clover and the amount of N supplied to grain sorghum by the clover.

Summary:

Arrowleaf clover and five N rates (0, 30, 60, 90, and 120 pounds per acre) plus a fallow check with 120 pounds N per acre were evaluated.

Significant findings:

Data were pooled and analyzed for the three year period. Analyses for grain and dry matter yields showed that grain sorghum did not respond to N. Panicle, leaf, and total N content in grain sorghum were not affected by N rate. However, stem N content was significantly increased by N rates greater than 60 pounds per acre. Reseeding stands decreased regardless of N rate as the study progressed. This data suggest that arrowleaf clover, when grown for seed production over a several year period, can meet the N requirements for grain sorghum. Lack of reseeding of the clover tends to propose that some soil disturbance be made to enhance germination.

Project:

28A801M.11 Arrowleaf Clover as an Nitrogen Source for No-till Cotton

Project Stage:

Final year of a 3 year study.

Background:

Research has shown that crimson clover and hairy vetch can reduce the need for commercial N in no-till crop production. Arrowleaf clover, an excellent reseeding legume, could reduce production expense for no-till cotton (*Gossypium hirsutum*).

Objective:

To determine if cotton can be grown successfully no-till in arrowleaf clover and the amount of N supplied to cotton by arrowleaf clover.

Summary:

Arrowleaf clover and five N rates (0, 20, 40, 60, and 80 pounds per acre) plus a fallow check with 80 pounds N per acre were evaluated.

Significant findings:

Data were pooled and analyzed for the three year period. Seedcotton yield and plant height did not respond to N. During the first year, plant maturity was delayed due to excessive plant N accumulation. Reseeding stands decreased as the study progressed. A crop such as corn (*Zea mays*) or grain sorghum that utilizes a large amount of N may be better suited the first year following arrowleaf seed production. Light soil disturbance may enhance reseeding of the arrowleaf clover.

Project:

28A801M.12 Reduced Cover Crop Seeding Rates in No-till Cotton

Project Stage:

Final year of a 2 year study.

Background:

One major limiting factor in using a cover crop is seed cost. If seeding rate could be reduced without decreasing cover crop performance, cover crop use could increase.

Objective:

To determine the effects of reduced seeding rates on cover crop canopy cover and dry matter yield and the succeeding no-till cotton crop.

Harvesting cover crops

Summary:

Cover crop [and recommended seeding rate (lb/acre)] used in this study were crimson clover (20), hairy vetch (30), and wheat (*Triticum aestivum*) (90). Seeding rates were 0.25X, 0.5X, 0.75X, and 1.0X the recommended rate. Parameters measured were cover crop canopy cover, cover crop dry matter yield, and seedcotton yield.

Significant findings:

Decreasing seeding rate by 50% did not affect dry matter yield while decreasing seeding rate by 75% did not affect seedcotton yield. However, canopy cover was significantly decreased ($P \leq 0.05$) by decreasing seeding rate by 25%. Seeding rates may be reduced to decrease production costs, however, maximum soil conservation benefits will not be obtained if rates are decreased by greater than 50%.

Project:

28A801M14 Management Systems for Double-cropped Southernpea with Wheat

Project Stage:

Final year of a 3 year study.

Burning wheat straw

Background:

Southernpea (*Vigna unguiculata*) has the potential to become an alternative cash crop in the southeastern United States. If it could be grown in a double-cropping system, the producer could increase the net income per acre.

Objective:

To evaluate establishment methods in a no-till system and the effects of double-cropping on plant growth and development.

Summary:

Management systems evaluated were burn straw, remove straw, incorporate straw, leave straw + cultivate, no-till, no-till + 30 lb N/acre, and paratill plow (in the fall). Monocropped peas served as a check. Parameters studied were plant population, plant height, pods per plant, seeds per pod, seed weight, seed yield, plant dry weight, and plant component and total N content.

Significant findings:

Southernpea was successfully grown in all management systems. No significant differences were found for seed yield, plant growth parameters, or N content when analyzed over years. It can be concluded from these results that southernpea can be grown successfully using conservation tillage and can be double cropped with wheat thus possibly increasing net returns.

Project:

28A801M.17 Establishment Methods of Sweetpotato in a Conservation Tillage System

Project Stage:

First year of a 3 year study.

Background:

Preliminary work at this PMC has shown no significant differences between yields of no-till and conventionally tilled sweetpotato (*Ipomoea batatas*). Cover crops evaluated did not influence yield. One major problem that occurred during that study was getting the transplanter to close the opening around the slips.

Objective:

To determine the minimum soil disturbance required to successfully establish sweetpotato and maintain high yields and if transplanter modification is necessary.

Summary:

Five establishment methods were evaluated in this study using wheat as a cover crop (fall prepared seedbed). Methods were 1) paratill plowing, 2) planter modification, 3) planter modification + cultivation, 4) no-till, and 5) conventional tillage. Slips were established successfully in all systems. We did experience a problem in the paratilled plots where the transplanter tended to plant on the side of the row. In future years, these plots will be paratilled at least four weeks before planting.

Significant findings:

Plant population and yields (#1, canner, and total) were not affected by establishment methods. Though not significant and only with one year's data, paratilled sweetpotato did tend to produce higher yields for each grade and total yield. Grass weeds were controlled chemically while broadleaf weeds had to be hoed in all plots.

Project:

28C804L Establishment and Management of Vegetative Barriers

Project Stage:

Fourth year of a 5 year study.

Grass hedges

Background:

Vegetative barriers (grass hedges) are narrow strips of tall, stiff, dense vegetation that have potential to reduce erosion and trap sediment. They may be a cost-effective alternative to terraces or buffer strips.

Objective:

This study was started in 1992 to find a suitable plant or combination of plants to use in hedges. Management requirements of plants used in hedges are being developed.

Summary:

1995 was the second full year of measuring sediment accumulation above the hedges. The fallowed cropland demonstration site was 6.8% slope and erodes at an annual

rate of 132 tons per acre without conservation measures according to USLE estimates.

Significant findings:

Some trends are developing that are noteworthy. The high fertility rates used in a well managed crop field tends to favor the introduced species like Miscanthus (*Miscanthus sinensus*) and giant reed (*Arundo donax*), while natives like eastern gamagrass (*Tripsacum dactyloides*) and indiangrass (*Sorghastrum utans*) suffered stand reductions and intense weed competition. Other plants like 'Alamo' switchgrass (*Panicum virgatum*), dwarf switchcane (*Arundinaria gigantea*), and pampasgrass (*Cortederia sellowana*) showed no adverse effects from high fertility. Weeds that invaded the plots, particularly goldenrod (*Solidago* sp.), are doing an acceptable job when mowed occasionally. Alamo switchgrass still appears to be the most practical hedge species except for concentrated flow areas when pampasgrass, miscanthus, and giant reed are better suited.

Sediment accumulation above individual hedges varies from a low of 0.25 feet to a high of 1.43 feet but there is no consistent trend between species. No washouts have occurred in any plots.

Pasture and Rangeland Erosion Control

Project:

28A118R2 Silage Production and Quality of Eastern Gamagrass

Project Stage:

First year of a 3 year study.

Background:

Corn and sorghum are the two major silage crops grown in the Southeast. Eastern gamagrass has the potential to produce high DM yields. However, little information is available on eastern gamagrass used as a silage crop. If successful, eastern gamagrass could lower total production expense.

Objective:

To evaluate the performance of eastern gamagrass used as a silage crop and to compare its production and quality to that of corn and sorghum.

Summary:

Plots were established in 1994. Since seed of accession 9062680 were unavailable, eastern gamagrass plots were established by transplanting propagules. In 1995, corn

had to be replanted twice due to bird damage. Eastern gamagrass was harvested on a 45-day schedule, allowed to field dry to a 68% moisture content and then ensiled. Corn and sorghum were harvested when moisture content also reached 68%.

Significant findings:

Broadleaf weeds were easily controlled in eastern gamagrass plots by postemergence herbicides. Therefore, production costs were decreased. Corn yield was decreased by the late planting date (May 5). Eastern gamagrass significantly increased DM yield as compared to sorghum and corn. Annual production costs are also reduced by not having to till and plant each year.

Project:

28C125O Effects of Poultry Litter Application on Soil and Water Quality in the Shiloh Creek Watershed Wayne County, Mississippi.

Project Stage:

First year of a 3 year study.

Background:

Many proposed best management practices (BMP) have been developed from numerous research studies for the disposal of poultry litter. The ability and willingness of a poultry producer to follow these guidelines in a field situation is not well documented. It was necessary to evaluate these BMP and their effectiveness in a field situation.

Objective:

To monitor local waste management practices in a field condition and assess their impact on soil and water quality before, during, and after poultry litter application.

Summary:

Monitoring equipment was set up on a local producers farm which had not received prior poultry litter application. Baseline data was taken on soil and water quality parameters. Water samples were then taken after each storm event which produced runoff. Samples are monitored for nitrate/nitrite nitrogen and ortho-phosphate.

Significant findings:

There was a total of 18 observed rainfall events which produced runoff. Events following litter application had extremely high levels of ortho-phosphorus. Nitrate/ nitrite nitrogen levels remained low throughout the year.

Initial soil test data found that there was sufficient phosphorus to meet forage requirements. No additional phosphorus was recommended. A condition now exists where additional litter application may cause water quality problems.

Project:
Restoring CRP Fields by Clipping Treatments

Project Stage:
First year of a 3 year study.

Background:
As CRP contracts expire, fields may need to be renovated to remove existing perennial weeds. Estimated costs of establishing a permanent pasture range from $98 to $140 per acre depending upon the desired forage. If a CRP field has some desirable species, growth of these plants may be encouraged by clipping weeds. However, herbicide(s) and fertilizer may also be needed to decrease weed competition.

Clipping CRP plots

Objective:

To determine if clipping alone will encourage existing desirable forage species in CRP fields or if fertilizer and chemical means are needed to reduce weed competition [primarily broomsedge (*Andropogon virginicus*)]

Summary:

Treatments consisted of a) check, b) clipping (July 1 and August 1), c) clip + fertilizer (lime applied to adjust soil pH to 7.0; P and K applied at 22 and 43 lb/acre, respectively, on April 15; N as ammonium nitrate was applied at 52 lb/acre on April 15 and July 1), and d) clip + fertilizer + herbicide (Roundup applied at 1.0 lb ai/acre on July 11 using 20 gallons of water per acre). Broomsedge was the predominant species in the plots with lesser amounts of fescue (*Festuca arundinacea*), bermuda (*Cynodon dactylon*) and annual legumes (*Lespedeza* sp.) present.

Experimental design was a randomized complete block with four replications. Plot size was 13.3 x 60'.

Significant findings:

Roundup did an excellent job in controlling broomsedge, however, it also eliminated the desired fescue. A difference was found by improving soil fertility in addition to clipping for maintaining forage stands. Since management systems may require more than one year to achieve the desired results, this study will be evaluated two additional years.

Project:

28I100U.1 Yield and Quality of Upland Switchgrass

Project Stage:

First year of a 3 year study.

Background:

Upland switchgrass is a low-growing type (3-4 feet) of switchgrass with moderate to fine stems whereas the lowland type is tall (6 feet) and course-stemmed. The upland type has potential for warm-season forage on droughty hill land in the PMC's service area. There is limited or no data available on the response of the upland type to seasonal harvests in the Southeast or on yield and quality.

Objective:

To compare dry matter yield from multiple seasonal harvests and quality potential of 'Blackwell', a midwestern cultivar, and four Mississippi upland types, 9062746 Grenada County; 9062747 Calhoun County; 9062759 Amite County and 9062760 Amite County.

Summary:

Plots were established in May, 1994 as single rows, 20 feet in length. Entries were planted in a randomized complete block with four replications. Nitrogen and potash were applied at 170 lb/acre/year in three split applications. Phosphorus was brought to medium to high level. Dry matter yield was determined by harvesting 10 feet from the center of each plot to a stubble height of four inches. Plots were harvested three times in 1995. The first two harvests were made in the boot stage while the third harvest was made at maturity. Samples collected from each harvest were used for estimating crude protein and digestibility.

Harvesting switchgrass

Significant findings:

Despite low rainfall in mid and late summer yields were exceptionally good. When harvested in the boot stage, upland switchgrass has potential to produce respectable yields with acceptable quality. Collections from Grenada, Calhoun and Amite County increased yield significantly more than Blackwell. These collections produced an average yield of 7 tons/acre which was 52% more than Blackwell. No differences occurred among entries for crude protein. Crude protein ranged from 9 to 10% in the first two harvests, but decreased after the plants

reached maturity which is typical of warm-season grasses. Amite county collections were superior to Blackwell for acid detergent fiber and total digestible nutrients. Estimated digestibility ranged from 55-58%, but declined following maturity.

Project:

28I124G.1 Switchgrass Seed Germination Study

Project Stage:

First year of a 2 year study.

Background:

Several researchers have reported that upland switchgrass ecotypes have a greater level of seed dormancy than lowland types. There are also indications that the geographic location of seed production can affect dormancy, with those from southern latitudes having less dormancy. Prechilling is recommended to break seed dormancy. Afterripening can overcome dormancy, but the optimum conditions and length of treatment required will vary between ecotypes and seed lots. Long-term storage under climatically-controlled conditions will also overcome dormancy.

Objective:

(1) To study the effect of seed age and prechilling treatments on a lowland ecotype.
(2) To study afterripening treatments for an upland and two lowland ecotypes from different geographic sources.

Summary:

(1) This study was conducted on Alamo switchgrass seed that was 1, 3, and 4 years old. Seed treatments consisted of: non-prechill, soaking the seed for 24 hours followed by 21 days of prechill, or moistening the seed followed by 21 days prechill.
(2) After-ripening requirements of Mississippi-grown accession 9062746 are compared to Mississippi-grown Alamo and Kansas-grown 'Kanlow'. Seed is stored at room temperature, in a seed vault, and under uncontrolled conditions in a warehouse. Seed treatments consist of non-prechill or 2 weeks prechill.

Significant findings:

(1) Three and four year old seed did have less dormancy than one year old seed. Prechilling was only beneficial for the one year old seed. Results are presented in 1995 Technote No. 4.
(2) This study has just begun and no findings can be reported at this time.

Project:

28R503R Eastern Gamagrass Intercenter Strain Trials

Project Stage:

Establishment phase of a 3 year study.

Background:

A national plant materials program initiative in 1988 was to select superior regionally adapted eastern gamagrass ecotypes for plant breeding work at the Manhatten (Kansas) PMC. As the project progressed, several conceptual flaws developed including incompatible flowering dates and chromosome number between southern ecotypes and the Kansas gynomonecious lines. The southern ecotypes are tetraploid lines and are apomictic. A new strategy for southern PMCs was developed in 1993 to capitalize on the tetraploid eastern gamagrasses and their inheriently stable apomictic trait. Superior selections from the Knox City, East Texas, Florida, Arkansas, Mississippi, and New Mexico PMCs would be simulataneously tested together at the Knox City, East Texas, Arkansas, Florida, Mississippi, and Georgia Centers. Selections from these Intercenter Strain Trials (ICST) would be likely candidates for release and use throughout the entire southeastern United States.

Objective:

To select superior regionally adapted lines of eastern gamagrass for southern forage production systems and potential energy biomass utilization.

Summary:

The eastern gamagrass ICST assembly was planted in the field in February 1995. Thirteen accessions from six PMCs were established in a randomized complete block with four replications. Nine plants of each replicated accession were space planted on a 3 x 3 plant grid with spacing of 24 inches between plants. Each sub plot within the block was enclosed by a border row of plants to prevent edge effect bias. The 1995 growing season was an establishment year and no evaluation data was taken. Plots were fertilized at the rate of 50 #/acre of P_2O_5. N was applied in three applications in May, June, and August at the rate of 25 #/acre per application. Plots were hand weeded and hoed to control weeds. Irrigation was applied frequently in late summer and fall to relieve drought stress. Skips where plants failed to survive were replanted to ensure uniformity of stand.

Significant findings:

Gammagrass established successful stands in 1995 and will be ready for clipping trials in 1996. This first growing season was hot and extremly dry which required supplemental irrigation. Disease development,

particularly ergot, on the seed appeared heavier than in most years. Several accessions constantly exhibited good vigor, growth, and forage potential.

Critical Area Erosion Control

Project:
28A2823 Vegetative Sediment Basins using Giant Reed

Project Stage:
Preliminary evaluation

Background:
Sediment basins of earthfill construction are expensive to build and maintain and are often destructive to the area used for borrow material. Where sediment retention is the primary objective and not gully control, stiff plants like giant reed may offer a cheaper alternative that requires little maintenance once established. Giant reed does not spread from seed. It is propagated mostly by short, thick rhizomes and is not known to escape as a weed.

Objective:
To conduct preliminary demonstrations using giant reed as a vegetative sediment basin to see if further testing is warranted. If successful, a technical standard could eventually be developed.

Summary:
Only the three sites planted in 1994 were evaluated and maintained in 1995.

Significant findings:
All plants survived the mild winter. In fact, the canes of giant reed remained green and sprouted new leaves in the spring. It is best to cut the canes back during dormancy to stimulate new shoot formation which is the method of spread. Less shoot formation than normal was noted where canes were not cut back. Cultivation for 1 or 2 years after planting helps weed control or herbicides can be used the second year. Nitrogen fertilizer should be applied each year until a dense thicket of giant reed stems has formed.

Project:
28A482E Biotechnical Erosion Control (BEC) for Stream Channels, Shorelines and Steep Slopes

Project Stage:

Third year of a 5 year study.

Background:

Alternative inexpensive, practical, and effective means of stabilizing critical areas are needed to supplement currently recommended conservation measures now used in Mississippi and the Mid-south. Biotechnical erosion control, combining the use of plant materials with engineering and plant science principles, can provide a cost effective alternative to the use of mechanical engineering practices for critical area stabilization.

Objective:

To develop recommendations of adapted plants and planting techniques for Biotechnical Erosion Control applications on critically eroding streamchannnels, shorelines, and steep unstable slopes in the Mid-south.

Streambank erosion

Summary:

Biotechnical erosion control plantings were made on Goodwin Creek (located in Panola County, Mississippi) in 1993 and 1994. Seven herbaceous and eighteen woody species were planted along the channel at water's edge, on deep sands, gravel bars, eroded hardpan material, and

on a steep vertical bank. Herbaceous grasses were sprigged, or established by planting rhizomes. Woody plants were planted as live stakes or live facine bundles in several moisture regimes.

Significant findings:

Of the woody species planted, Bankers willow (*Salix cotteti*), erect willow (*S. eriocephala*), sandbar willow (*S. exiqua*), and red-osier dogwood (*Cornus stolonifera*) appear to have greatest potential for quick and successful establishment along waters edge and moist bar areas. Shallowly planted live facine bundles generally rooted and sprouted profusely, but were subject to disturbance during periods of heavy flow. Live stake plantings were more resistant to washing out, but were not as vigorous or effective as the facine bundles during the initial year of establishment. The herbaceous grasses also were subject to being washed away during the establishment phase. Many saltmeadow cordgrass (*Spartina patens*) and soft-rush (*Juncus effusus*) plants at or near waters edge were removed by heavy flow and changes in the stream bed. Although not planted along the waters edge, giant reed proved to be a tenacious survivor when planted on deep sterile sands or in areas subject to intense competition.

The establishment and growth of even a few plants along barren sandbars provided noticeable ecological changes. Their presence modified microsite environmental conditions such as soil temperature, moisture, and fertility, creating favorable conditions for other plant species to become established, as well as improving habitat for insects, fish, birds, and mammals.

Woodland Erosion Control

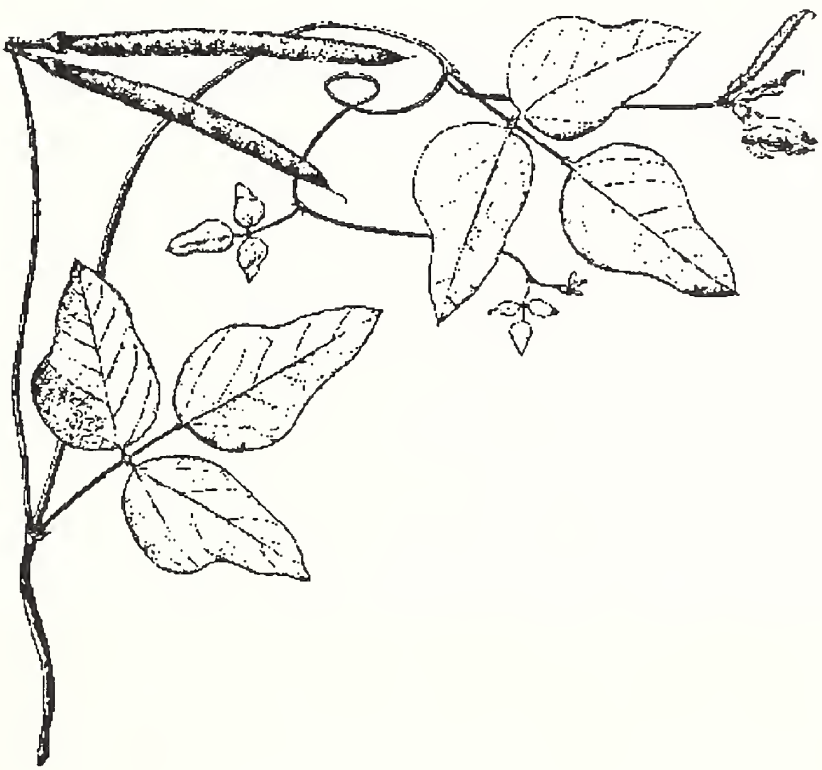
Project: 28A106B.1

Project Title:
Trailing Wildbean

Stage of Project:
Field Increase

Objective:
To increase seed stocks for future release of an adapted ecotype of trailing wildbean for wildlife and for critical area erosion control.

Background:
Trailing wildbean *(Strophostyles helvula)* is an annual, herbaceous, warm season legume usually found on well drained alluvial and sandy soils throughout the eastern United States. It has good reseeding and volunteering characteristics. Through nitrogen fixation, trailing wildbean contributes to the growth of other plants, and is especially beneficial to a site during early plant successional stages. Also, the seed are eaten by birds and small mammals, and the forage is palatable to livestock and wildlife. Trailing wildbean makes a dense, viney growth under optimum conditions and has potential for erosion control on disturbed sites as well as benefit for wildlife.



Trailing wildbean

Status:
Three accessions of trailing wildbean were continued in initial and field scale production in 1995 to increase seed stocks for release. Acreage of accession 9021719 was increased to 1.5 acres and replanted in a new location in early April, 1995. The remaining two accessions were allowed to volunteer in their respective 1994 locations. The new planting, using non-scarified seed was extremely slow germinating. To hasten germination and stand development, the accession was replanted in late April with lightly scarified seed. Germination and stand was satisfactory with the replant. Volunteer stands on

the 1994 increase areas were good. Field preparations included making a firm, clean seedbed, fertilizing at rate of 400 lb/acre of 8-24-24 fertilizer, and incorporating a grass control herbicide (Treflan). Seed was planted at a rate of 8-10 seed per linear foot of row. Planting depth varied from 1/4 to 1/2 inch depth.

Significant findings:
Trailing wildbean seed left on the field over winter has good reseeding ability. Shattered seed on the 1994 increase plots voluntarily germinated in 1995 and resulted in good stands. For successful stand establishment with spring plantings, lightly scarify the seed and treat with the proper innoculant prior to planting. Trailing wildbean seed production will be dependent upon weather during the growing season. Production in 1995 was extremely poor due to extended hot, droughty conditions with little rainfall from mid-summer to fall. Flowering was good, but most pods failed to set. No seed harvest was made.

Project: 28A101D.1

Project Title:
Showy Partridgepea Cultivar Release

Stage of Project:
Field Increase

Objective:
To increase seed stocks for future release of an adapted Showy Partridgepea (*Chamaecrista fasciculata*) ecotype for wildlife and for critical area erosion control.

Background:
Showy partridgepea is a herbaceous, warm season annual legume that commonly grows in the Mid-South along roadsides, idle areas, open woods and fields. Partridgepea has showy yellow flowers and often grows in dense stands providing food and cover for birds and small mammals. Partridgepea has potential use in seeding mixtures for beautification, wildlife, or for stabilizing critically eroding or low maintenance sites such as steep roadbanks, mined areas, utility rights of way, and forestry loading zones.

Status:
Field increase of two partridgepea accessions was initiated in 1995. Accession 9028375 was planted in a 1.3 acre field on a smooth, firm, clean seedbed. A grass control herbicide (Treflan) was incorporated at the rate of 1.5 pints per acre. Fertilizer (8-24-24) was surface applied over the field at the rate of 350 lb./acre. Seed was cold stratified for a period of 35 days prior to planting. This seed was planted in early

April, 1995, at a rate of 10 seed per linear foot utilizing a Planet Jr. planter and a #14 round hole plate. Seed placement depth varied from 1/8" to 1/4". Germination was slow and the stand was sparce. The accession was replanted April 24, 1995, using lightly scarified seed. Adequate soil moisture, and the use of scarified seed resulted in quick germination and a good stand. In addition to the planted acreage, a volunteer stand from a composite of accessions germinated on a 1.6 acre field which had been in seed production in 1994. The field was fertilized at the same rate as the planted field, but no chemical weed control was made.

Steep slope erosion control evaluation

Significant findings:
Showy partridgepea can be easily established in spring plantings by lightly scarifying the seed immediately prior to planting. Innoculant treatment of seed at planting should be beneficial to plant growth, but may not be an absolute necessity. Innoculant was not used on PMC plantings. Seed left on the field over winter usually produces good stands the following year. Old stalks and other residue should be shredded to allow optimum conditions for natural regeneration of volunteer stands. Seed production for both the planted stand and the volunteer stand averaged 100 pounds per acre. Seed production was affected by an extended hot, droughty period during flowering and seed development, but yield was

better than expected. Indeterminate seed maturity and shattering loss prevents full realization of yield potential.

National Park Service Projects

Project:

28A900F.4 Native Plant Production for Natchez Trace Section 3X
28A901B.3 Native Plant Production for Natchez Trace Section 3P

Project Stage:

Fifth year of a 6 year study.

Background:

In recent years, PMCs nationwide have assisted the National Park Service (NPS) by producing plant materials for use in national parks. To assure locally adapted ecotypes are grown, NPS requires that the original source of the plant be collected from the vicinity of the planting site within the park. Jamie L. Whitten PMC originally entered into an interagency agreement with NPS in 1990 to provide plant materials for use in revegetating portions of the Natchez Trace Parkway following construction.

Objective:

To provide seed of native grasses and forbs and transplants of native shrubs for the 3X and 3P sections of the Natchez Trace Parkway.

Summary:

Production for the 3X section was completed in 1994. All seed was delivered in 1994; one half of the required shrub transplants was delivered in the spring of 1994, with the remainder to be delivered in spring 1996. The following species of plants were grown:

Shrubs -
American beautyberry (*Callicarpa americana*); witchazel (*Hamamelis virginiana*); oakleaf hydrangea (*Hydrangea quercifolia*); Carolina rose (*Rosa caroliniana*); Elliott's blueberry (*Vaccinium elliottii*); rusty blackhaw (*Viburnum rufidulum*)

Grasses -
winter bentgrass (*Agrostis hyemalis*)*; little bluestem (*Schizachyrium scoparium*)*; purpletop (*Tridens flavus*)*

Black-eyed Susan

Forbs -
heartleaf aster (*Aster cordifolius*); calliopsis (*Coreopsis tinctoria*)*; clasping coneflower (*Dracopis amplexicaulis*)*; Philadelphia fleabane (*Erigeron philadelphicus*)*; black-eyed susan (*Rudbeckia hirta*)*; lyre-leaf sage (*Salvia lyrata*)*; blue-eyed grass (*Sisyrinchium angustifolium*)

Woody plant production for the 3P section has been postponed, although seed production continued throughout 1995. The plant list above also applies to the 3P section with the addition of:

Shrubs -
red buckeye (*Aesculus pavia*); farkleberry (*Vaccinium arboreum*); strawberry bush (*Evonymus americana*)

Grasses -
Virginia wildrye (*Elymus virginicus*)*; little barley (*Hordeum pusillum*)*

Forbs -
bur marigold (*Bidens aristosa*); partridge pea (*Chamaecrista fasciculata*)*; lance-leaf coreopsis

(*Coreopsis lanceolata*)*; swamp sunflower (*Helianthus angustifolius*); rosin weed (*Silphium integrifolium*)

Significant findings:

Elliott's blueberry seed appears to have a rudimentary embryo when the fruits ripen because they respond to warm stratification. Most *V.* sp. require about three months cold stratification to overcome dormancy. Past attempts at storing Elliott's blueberry seed collected when ripe in May and June until fall for cold stratification were completely unsuccessful (0% germination), even when seed was subsequently exposed to a warm period followed by another cold period. Seed collected in 1995 was placed in warm stratification (constant 70°F) soon after cleaning, with plans to then cold stratify the seed. Germination was noted after five months warm stratification. Germination continued steadily over the next four months.

Project:

28A901B.2 Natchez Trace Native Species Test Plots

Project Stage:

Final year of a 3 year study.

Background:

Information was needed to determine the best planting dates and planting methods for the native grass and forb species being grown for the Natchez Trace Parkway.

Objective:

To test possible establishment methods.

Summary:

Plots were planted beginning in 1992. They were established in two different planting sites (open, sloping ground and a sloping forest edge) to simulate potential conditions along the Parkway. Treatments included four planting dates (April, June, August, and October), three mulches (straw, Excelsior blanket, and no mulch), and two sowing methods (native species planted with cover crops vs native species overseeded into established cover). Cover crops used were a mixture of grasses commonly used in roadside plantings in this area. The twelve native grasses and forbs marked with an asterisk in the projects above were sown together as the native plant mixture. Evaluation of native plant establishment was completed in 1995 and a final report on the project was prepared.

Applying mulch blankets to test plots

Significant findings:

Native plant growth was generally greater in the open area plots than along the forest edge. August was the best planting date in this test, however, some species do appear to prefer other sowing dates. Adverse weather conditions after the June planting date did affect initial establishment, however, this pattern did not hold up through later evaluations. Populations of native species were 25% greater when sown together with the cover crops than when overseeded into an existing cover. Although straw mulch seemed to initially limit establishment of cover crops and native seed, later ratings show little difference between the three mulch treatments. All species sown (except Philadelphia fleabane) were present in at least some plots, however, species such as partridge pea, lance-leaf coreopsis, black-eyed susan, and lyre-leaf sage were found in a greater number of plots than the other species. Perennial grasses such as little bluestem, Virginia wildrye, and purpletop took several years to become noticeable. Large amounts of mulch or plant residue and shading from larger species (i.e. partridge pea) can limit establishment and growth of smaller species, especially annuals. Most annual species are no longer present in the plots after several years of this type of competition.

Regional Plant and Water Testing Laboratory

Mission Statement:

The purpose of the Regional Laboratory is to provide quality plant and water testing services for the network of USDA/NRCS Plant Materials Centers across the nation.

Testing Services:

The following is a list of plant and water testing services we provide for our customers.

Water Samples	Plant Samples
Nitrate/Nitrite N	% Nitrogen (Crude Protein)
Total N	Acid Detergent Fiber
Ortho-phosphorus	Neutral Detergent Fiber
Total P	% Phosphorus
Alkalinity	Ash content
Total Solids	Estimated % TDN, RFV, etc.
Total Suspended Solids	

Customer Base:

Water samples were received from the following customers:

Arkansas Plant Materials Center in Booneville, Arkansas. They are conducting a nitrogen utilization project which generates 90 water samples per rainfall event. Booneville submitted 540 water samples for nitrate/nitrite and ortho-phosphorus.

NRCS, Stoneville, Mississippi. The Water Resources Planning Staff is conducting a Delta Water Supply Study. This study samples up to 18 waterways a month. Samples are tested for nitrate/nitrite, ortho-phosphorus, total N, total P, alkalinity, total solids and total suspended solids. The study submitted 182 samples in 1995.

NRCS Field Office in Waynesboro Mississippi. The PMC, in conjunction with the field office in Wayne county, is working on a land applied poultry litter demonstration. This study produced 429 samples which were tested for nitrate/nitrite and ortho-phosphorus.

Plant samples were received from the following customers.

Jimmy Carter Plant Materials Center in Americus, Georgia submitted 153 forage samples for percent N (crude protein) and

acid detergent fiber which was used to estimate percent total digestible nutrients.

Analyzing forage samples

Jamie L. Whitten Plant Materials Center in Coffeeville, Mississippi submitted samples from five studies. The studies included: Hairy Vetch variety trial (32 samples), Upland Switchgrass quality study (120), Vetch N utilization (20), cover crop study (108) and a limited resource farmer study (384) totaling 696 samples.

Water samples submitted for 1995.....1151
Plant samples submitted for 1995..... 849
Total sample load.....2000

PLANT MATERIALS INCREASE FOR 1995

The plant materials process requires populations to be increased during one or more stages. Often, only a small number of seed or plants of the originally collected material is available, and several years of propagation may be required to produce sufficient materials for testing, release, and

eventual use. Materials in increase are considered to be in either an initial, special project, or field production increase. Species in special project increase for the Natchez Trace Parkway were listed in the section describing that project. Other materials increased during 1995 include:

Initial Increase:

Genus/species	common name	accession
Arundinaria gigantea	Dwarf switchcane	9035218
" "	"	9035247
Arundo donax	Giant reed	9035156
Calamagrostis pseudophragmites	Afghan reedgrass	222041
Chamaecrista (Cassia) fasciculata	Partridge pea	9028375
Coronilla varia	'Chemung' crownvetch	443268
" "	'Penngift' crownvetch	9002171
" "	'Emerald' crownvetch	278698
" "	Crownvetch	9028585
Echinodorus cordifolius	Creeping burhead	9062853
Lespedeza virginica	Slender lespedeza	9045294
Medicago arabica	Spotted bur clover	9059035
" "	" "	9077061
Medicago sp.	Bur clover	9062793
Miscanthus sinensis	Chinese silvergrass	434142
Phragmites australis	Common reed	434213
Salix cotteti	Bankers willow	434285
S. gilgiana	Gilg willow	9004882
S. humilis	Prairie willow	9004886
S. eriocephala (rigida)	Erect willow	9004885
Scirpus cyperinus	Woolgrass	9062741
S. tabernaemontani (validus)	Soft stem bulrush	9062740
Spartina patens	Marshhay cordgrass	421237
" "	"	421238
" "	"	415141
Strophostyles helvula (helvola)	Trailing wildbean	9062718
" "	"	9021719
Thalia dealbata	Powdery thalia	9059002
Trifolium carolinianum	Carolina clover	9062792

Field increase:

Genus/species	common name	Cultivar
Glycine soja	Reseeding soybean	'Quail Haven'
Trifolium vesiculosum	Arrowleaf clover	Meechee
Panicum hemitomon	Maidencane	Halifax
Echinochloa frumentacea	Japanese millet	'Chiwapa'
Paspalum notatum	Bahiagrass	'Wilmington'

Harvesting seed increase plots

PLANT MATERIALS SHIPPED IN 1995

During 1995, 16 lots of plants or seeds were shipped from the PMC to field locations for conservation trials. Total plants shipped was 875 plus rhizomes while seed shipments totaled 341 pounds.

The following species were shipped:

Halifax maidencane	7,225 rhizomes
Meechee arrowleaf clover	60 pounds
Quail Haven reseeding soybean	60 pounds
Sawtooth oak	60 plants
Arundo donax	655 plants
Chiwapa Japenese millet	201 pounds
Black-eyed Susan	2 pounds
Coreopis	3 pounds
Partridge pea	15 pounds
Eastern gamagrass	20 plants
Miscanthus sinensis	140 plants

PLANT MATERIALS CENTER RELEASES

The Jamie L. Whitten Plant Materials Center, in cooperation with MAFES, has released five plant cultivars which are available for commercial production. These cultivars are:

Quail Haven reseeding soybean

Quail Haven was released in 1986 as a plant for wildlife food and cover. It also can be used for hay and as a green manure crop. It is an annual, vining, hard-seeded legume which reseeds readily. Some soil disturbance in early spring is beneficial for successful establishment.

Meechee arrowleaf clover

Meechee clover was released in 1966. It can be used as a forage crop and as a cool season cover crop, although peak growth does not occur until April or May. A commonly recommended practice is to interseed 'Meechee' with ryegrass to extend spring grazing. It is a hard-seeded, annual legume, and seed can remain viable in the soil for several years. Disking or tilling in early fall encourages germination and establishment.

Chiwapa Japanese millet

Chiwapa was released in 1965. It is a tall, robust, annual, warm season grass which, when planted on mud flats in the summer and flooded after maturity, provides food for waterfowl. Seed resists deterioration when submerged. Chiwapa can also be used as an annual forage crop for livestock, but may be subject to lodging.

Wilmington bahiagrass

Wilmington was released in 1971. It is a warm season, perennial grass used for pasture and hay production. It is more cold tolerant in North Mississippi than 'Pensacola' bahiagrass, but low seed production limits its availability. Wilmington is readily identified by its dark green foliage.

Halifax maidencane

Halifax was released in 1974 for stabilization of stream channels and shorelines. It is a warm season, perennial grass adapted to wet areas. It does not produce viable seed. Propagation is by vegetative means using rhizomes.

Those interested in producing Halifax maidencane or other PMC releases can contact the Jamie L. Whitten Plant Materials Center.

TECHNICAL REPORTS

Technology transfer is a major priority at the Jamie L. Whitten PMC. Since 1985, numerous reports have been prepared on plant materials studies conducted by the PMC. Technical reports available for distribution are listed below.

1995 Reports

.Black-eyed Susan - A Useful Wildflower--B. B. Billingsley
.Comparison of Americus and Commercial Source of Hairy Vetch as a Cover Crop--Joel L. Douglas
.Planting and Maintenance of Wildflowers and Native Grasses in the Midsouth--Janet M. Grabowski
.Seed Germination of Alamo Switchgrass as Influenced by Age of Seed and Prechill--Joel L. Douglas and Janet Grabowski
.Yield and Quality of Upland Switchgrass--Joel L. Douglas, Mike Lane, and Scott Edwards
.Initial Evaluation of Eastern Gamagrass Ecotypes for the Mid-South--Joe Snider
.Using Hairy Vetch as a Nitrogen Source for Cotton--Herby Bloodworth
.Reduced Cover Crop Seeding Rates for No-till Cotton--Herby Bloodworth
.Renovation of Conservation Reserve Program Fields--Herby Bloodworth and Mike Lane
.Establishment Methods of Sweetpotato in a Conservation Tillage System--Herby Bloodworth and Mike Lane
.Sweetpotato and Peanut Response to Cover Crops and Conservation Tillage--Herby Bloodworth, Mike Lane, and Joe Johnson

1994 Reports

.Low maintenance trials of cool-season species on surface mines--Joel L. Douglas and James A. Wolfe
.Recommended plant sample preparation for PMC's--Scott D. Edwards
.Shoreline erosion control with maidencane--Joel L. Douglas
.Vegetative barriers for the Midsouth--Mike Lane
.Vetiver grass variety trials, 1989-1990--Joe Snider
.Peanut response to cover crops and tillage--Herby Bloodworth and Mike Lane
.Vegetative barriers for Mississippi's cropland--Joel L. Douglas
.Field plantings of marshhay cordgrass in the Delta states--Joel L. Douglas and James A. Wolfe
.Sweetpotato response to cover crops and conservation tillage--Herby Bloodworth and Mike Lane
.Field plantings of switchgrass cultivars in the Delta states--Joel L. Douglas and James A. Wolfe

.Cover crop potential of white clover: Morphological characteristics and persistence of thirty-six varieties--Joe Snider, Herby Bloodworth, and Vance Watson
.Establishment methods of cover crops in no-till cotton--Herby Bloodworth, James A. Wolfe, and Joe Johnson

1993 Reports

.Peanut Response to Cover Crops and Tillage--Herby Bloodworth
.Sweetpotato Response to Tillage and Cover Crop--Herby Bloodworth
.Evaluation of White Clover Varieties for Use in No-Tillage Systems and the Conservation Reserve Program--Joe Snider and Herby Bloodworth
.Vegetative Barriers for the Mid-South--Mike Lane
.Response of Tall Fescue and Bermudagrass to Fly Ash Treated Soil--Joe Snider
.Cover Crop Response to Soil Applied Herbicides Used in Cotton--Herby Bloodworth and Joseph R. Johnson

1992 Reports

.Selection of a Cold Hardy Bahiagrass Cultivar--L.H. Bloodworth, J.A. Wolfe, and J.A. Snider
.Low Maintenance Trials of Warm-Season Species on Surface Mines--J.A. Wolfe
.Seed Production and Variation Among Selected Trailing Wildbean Accessions--J.A. Wolfe
.Field Plantings of Afghan Reedgrass--J.A. Wolfe
.Field Plantings of Four Willow Selections--J.A. Wolfe
.Bluegrass Variety Trials--J.A. Snider and J.A. Wolfe

1991 Reports

.Response of Selected Accessions to Common Herbicides--L.H. Bloodworth
.Seed Production and Variation Among Selected Partridgepea Accessions--J.A. Wolfe

1990 Reports

.Initial Evaluation of Beaked Panicum--J.A. Wolfe and J.A. Snider
.Initial Evaluation of Purpletop--J.A. Wolfe and J.A. Snider
.No-Till Cotton Trails: I. Establishment Methods of Cover Crops in No-Till Cotton--L.H. Bloodworth
.No-Till Cotton Trials: II. Effects of Cotton Herbicides on Cover Crops--L.H. Bloodworth
.No-Till Cotton Trials: III. Effects of Cover Crops on Tillage and Cotton--L.H. Bloodworth

.Advanced Evaluation of Giant Reed: Comparison of a Coffeeville PMC Selection with Five Accessions from Brooksville--J.A. Wolfe and B.B. Billingsley
.Initial Evaluation of Rescuegrass for Winter Cover--J.A. Wolfe and J.A. Snider

1989 Reports

.Initial Evaluation of Trailing Wildbean--J.A. Wolfe, J.A. Snider, and B.B. Billingsley

1988 Reports

.Arkansas Blackland Prairie Field Evaluation Planting IX: Plant Performance in Adaptation Studies--J.A. Wolfe
.Investigations into the Establishment of Vegetative Flumes at the Coffeeville PMC--B.B. Billingsley, J.A. Snider, and J.A. Wolfe
.Evaluation of Potential Cover Crop Species for use in Chemically Treated Cotton Fields--J.A. Snider, J.A. Wolfe, and B.B. Billingsley
.No-Till Trials for Common Row Crops I. Milo Production Following Six Cover Crop Treatments--J.A. Wolfe, J.A. Snider, and B.B. Billingsley
.No-Till Trials for Common Row Crops II. Establishment of Cotton and Soybean into Winter Cover Without Plowing--B.B. Billingsley, J.A. Snider, J.A. Wolfe

1987 Reports

.Initial Evaluation of Partridgepeas--J.A. Wolfe and J.A. Snider
.Initial Evaluation of Illinois Bundleflower--J.A. Wolfe and J.A. Snider
.Advanced Evaluations of Giant Reed: I. Results of Monthly Planting Study--J.A. Wolfe, J.A. Snider, and B.B. Billingsley.
.Advanced Evaluation of Giant Reed: II. Planting Position Study--J.A. Wolfe, J.A. Snider, and B.B. Billingsley
.Advanced Evaluation of Giant Reed: III. Survival and Spread Study--J.A. Snider and J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting III: Performance of Introduced Bluestems--J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting IV: Performance of native Bluestems--J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting V: Performance of Switchgrasses--J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting VI: Performance of Indiangrasses--J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting VII: Performance of Shortgrasses--J.A. Wolfe

.Arkansas Blackland Prairie Field Evaluation Planting VIII: Performance of Five Lespedeza Varieties--J.A. Wolfe

1986 Reports

.Arkansas Blackland Prairie Field Evaluation Planting I: Plant Performance in Management Trials--J.A. Wolfe
.Arkansas Blackland Prairie Field Evaluation Planting II: Changes in Plant Performance over Three Years--J.A. Wolfe
.Rooting Trials for Promising Willows--J.A. Wolfe, J.A. Snider, and B.B. Billingsley
.Advanced Evaluation of Afghan Reedgrass: I. Results of Planting Trials--J.A. Wolfe and J.A. Snider
.Advanced Evaluation of Afghan Reedgrass: II. Effects of Clipping on Production--J.A. Wolfe, B.B. Billingsley, and J.A. Snider

1985 Reports

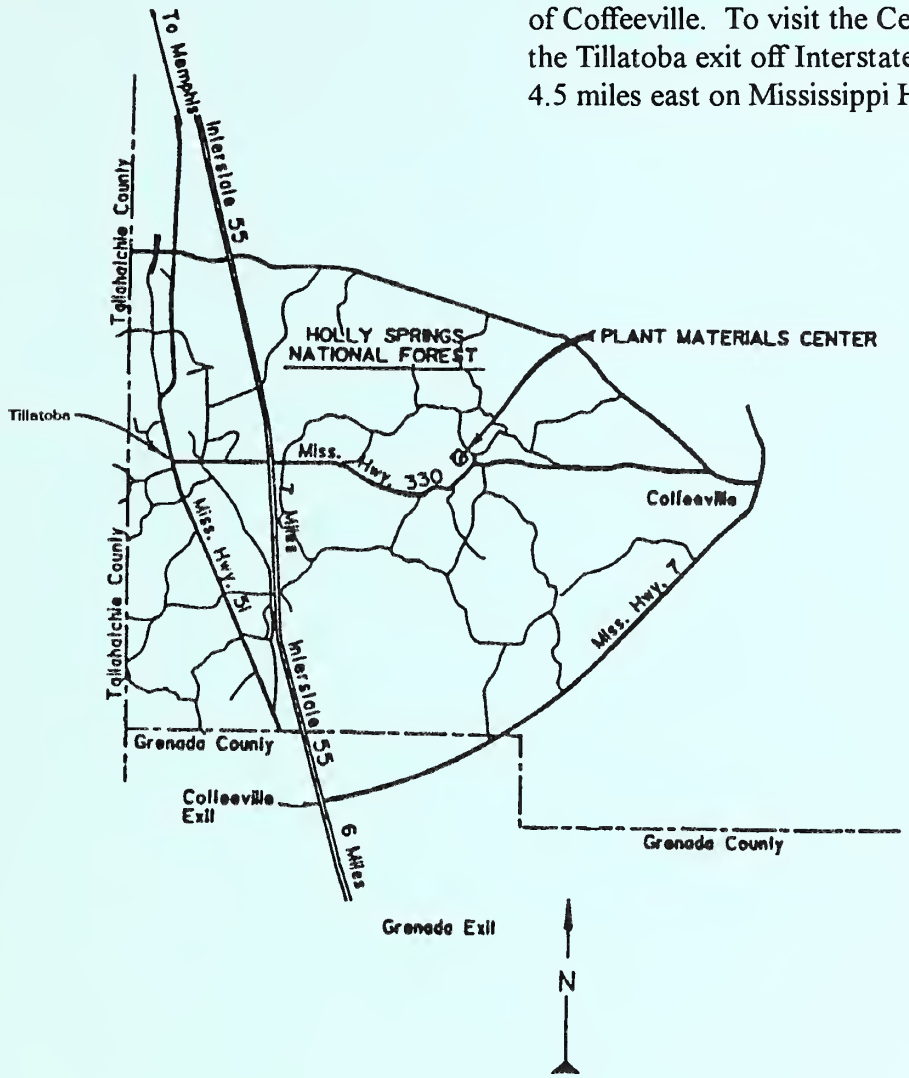
.Initial Evaluation of Yellow Bluestem--J.A. Wolfe, B.B. Billingsley, and J.A. Snider
.Initial Evaluation of Limpograss--J.A. Wolfe, B.B. Billingsley, and J.A. Snider
.Initial Evaluation of Brunswickgrass--J.A. Wolfe, B.B. Billingsley, and J.A. Snider
.Initial Evaluation of Indiangrass--J.A. Wolfe, B.B. Billingsley, and J.A. Snider

Copies of these reports may be requested from:

Jamie L Whitten PMC
Route 3 Box 215A
Coffeeville, MS 38922

Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by USDA-NRCS and does not imply its approval to the exclusion of other products that also may be suitable.

Jamie L. Whitten PMC is located in north-central Mississippi, within the Holly Springs National Forest about six miles east of the town of Coffeeville. To visit the Center, one may take the Tillatoba exit off Interstate 55 and travel 4.5 miles east on Mississippi Highway 330.



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